

REMARKS/ARGUMENTS

Reconsideration and withdrawal of the rejections of the application are respectfully requested in view of the amendments and remarks herewith. The present amendment is being made to facilitate prosecution of the application.

I. STATUS OF THE CLAIMS AND FORMAL MATTERS

Claims 1, 2, 4-11, 29-38 and 55-58 are pending. Claims 1, 6, 29, 31, 35, 55 and 57 are independent and hereby amended. No new matter has been added. It is submitted that these claims, as originally presented, were in full compliance with the requirements of 35 U.S.C. §112. Changes to claims are made simply for clarification and to round out the scope of protection to which Applicants are entitled.

II. SUPPORT FOR AMENDMENT IN SPECIFICATION

Support for this amendment is provided throughout the Specification as originally filed and specifically at paragraphs [0058], [0126], [0159] and Fig. 26 of Applicants' corresponding published application. By way of example and not limitation:

[0058] FIG. 26 is a diagram showing a table for the relation between the characteristic amounts used for estimating an audience state and **contents provision states**;

[0126] **The characteristic amounts used for estimating the state of the audience 60 may be selected and used according to the contents provision state. When the movement of the audience 60 can be preferably obtained and sound including voice is difficult to obtain,** the characteristic amounts showing a magnitude and periodicity of movement are mainly used to estimate an audience state. **When the movement of the audience 60 is difficult to obtain and sound including voice can be preferably obtained,** the characteristic amounts showing a volume and periodicity of sound are mainly used to estimate an audience state. As shown in FIG. 26, in a concert, as indicated by

.largecircle., **the characteristic amounts 301, 305 and 304** respectively showing a magnitude of movement, periodicity of sound and a volume of sound are used. In a dark movie theater, **the characteristic amounts 303, 305 and 304** respectively showing a power spectrum, periodicity of sound and a volume of sound are used. In a sports relay whose periodicity of sound is less than that of the concert, **the characteristic amounts 301, 302 and 304** respectively showing a magnitude of movement, periodicity of movement and a volume of sound are used. The characteristic amounts used for estimating the audience state are selected according to a contents provision state to estimate the audience state more properly.

[0159] In the above embodiment, the characteristic amount 301 showing **a magnitude of movement**, the characteristic amount 302 showing **periodicity of movement**, the characteristic amount 303 showing **the center of gravity of a power spectrum**, the characteristic amount 304 showing **a volume of sound**, and the characteristic amount 305 showing **periodicity of sound** are used to estimate the state of the audience 60. The characteristic amounts are not limited to these.

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	CHARACTERISTIC AMOUNTS USED FOR ESTIMATION				
	AT ESTIMATION OF BEATING TIME WITH THE HANDS AND CLAPPING, AND LAUGHING AND OTHER MOVEMENT		AT ESTIMATION OF BEATING TIME WITH THE HANDS AND CLAPPING		CHARACTERISTIC AMOUNT 304
	CHARACTERISTIC AMOUNT 301	CHARACTERISTIC AMOUNT 303	CHARACTERISTIC AMOUNT 302	CHARACTERISTIC AMOUNT 305	
CONCERT	○			○	○
MOVIE THEATER		○		○	○
SPORTS RELAY	○		○		○
⋮					

III. RESPONSE TO REJECTIONS UNDER 35 U.S.C. §103(a)

Claims 1, 2, 4, 5, 29-34 and 55-58 were rejected under 35 U.S.C. §103(a) over U.S. Patent No. 7,266,771 to Tow (hereinafter, merely “Tow”) in view of U.S. Patent No. 6,256,400 to Takata (hereinafter, merely “Takata”) in view of U.S. Patent No. 5,907,361 to Okada (hereinafter, merely “Okada”) and further in view of U.S. Patent Publication Application No. 2002/0073417 to Kondo et al. (hereinafter, merely “Kondo”).

Claims 6-8 and 35-36 were rejected under 35 U.S.C. §103(a) over Tow in view of Takata in view of Okada in view of U.S. Patent No. 7,373,209 to Tagawa (hereinafter, merely “Tagawa”) and further in view of Kondo.

Claims 9, 10 and 37 were rejected under 35 U.S.C. §103(a) over Tow in view of Takata in view of Okada in view of Tagawa in view of Kondo and further in view of U.S. Patent No. 5,550,928 to Lu (hereinafter, merely “Lu”).

Claims 11 and 38 were rejected under 35 U.S.C. §103(a) over Tow in view of Takata in view of Okada in view of Tagawa in view of Kondo and further in view of WO 91/03912 to Stevens (hereinafter, merely “Stevens”).

Claim 1 recites, *inter alia*:

...wherein **the movement amount is determined from a magnitude of movement, periodicity of movement, a center of gravity of a power spectrum, a volume of sound, and periodicity of sound** based on a contents provision state which indicates an environment condition of the audience that affects difficulty factors for obtaining movement of the audience and for obtaining sound of the audience... (Emphasis added)

Applicants submit that neither Tow nor Takata nor Okada nor Kondo, taken alone or in combination, would disclose or render predictable the above-identified features of claim 1. Specifically, none of the references used as a basis for rejection discloses or renders predictable “wherein **the movement amount is determined from a magnitude of movement, periodicity of movement, a center of gravity of a power spectrum, a volume of sound, and periodicity of sound** based on a contents provision state which indicates an environment condition of the

audience that affects difficulty factors for obtaining movement of the audience and for obtaining sound of the audience,” as recited in claim 1.

Specifically, the Office Action (see pages 2-3) asserts that Kondo teaches the movement amount is determined to be selected to estimate an audience state based on a contents provision state which indicates an environment condition of the audience that affects difficulty factors for obtaining movement of the audience and for obtaining sound of the audience, and refers to Kondo, paragraphs [0079], [0080], [0093]-[0098] and [0244]-[0245], which are reproduced as follows:

[0079] The audience image extraction unit 31 extracts from the image signal SV any noise components introduced during the detection process, and outputs an image signal SV1 as information about the actual actions or state of the audience.

[0080] The image of all seats ST captured by the video camera 4 shows effects of the picture (light) on the screen 1 being reflected on the seats ST. Such effects in the image signal SV caused by that reflection do not correspond with the actions or state of the audience. Accordingly, the audience image extraction unit 31 receives the video data V_{out} played back by the server 9, determines the luminance level of the video data V_{out} , for example, and then cancels out the components corresponding to the luminance level from the image signal SV, thereby producing the image signal SV1.

[0093] The audience audio extraction unit 33 removes from the audio signal SA any noise components introduced during the detection process to extract the audio components that are actually generated by the audience. The extracted audio components are output as an audio signal SA1.

[0094] The sound collected by the microphones 5 contains the audio components output via the speaker 3, i.e., the audio data component of the content being presented. Such audio data component is obviously not coming from the audience and should be regarded as noise picked up during the detection process.

[0095] To cancel out this audio data component, the audience audio extraction unit 33 receives the audio data A_{out} being played back by the server 9 and subtracts it from the audio signal SA. Thus, the audio signal SA1 is obtained which has no extraneous audio data component.

[0096] The audio signal SA collected by the microphones 5 from the audience is also influenced by the acoustic characteristics of the hall, such as its size and structure. There are also fixed noise components, such as from the air conditioning equipment in the hall. However, the acoustic characteristics of the

hall due to, e.g., the structure of the hall, are known in advance. Accordingly, the audience audio extraction unit 33 receives, as a fixed value, information Af corresponding to the components uniquely associated with the particular hall where the system is installed and affecting the audio signal SA. The audience audio extraction unit 33 then cancels out these influences due to the hall (by, for example, correcting the acoustic characteristics or canceling the noise components from the air conditioner).

[0097] Thus, the audience audio extraction unit 33 removes from the collected sound signal SA the speaker output and other influences and noise due to the acoustic characteristics associated with the structure of the particular hall. The audio signal SA1 output from the audience audio extraction unit 33, therefore, strictly represents the sounds actually generated by the audience, such as their voices and clapping of hands.

[0098] The above-mentioned influences of the structure of the hall may also affect the image signal SV. For example, opening and closing of the doors or other moving objects may be captured in the image signal SV. If such influence by the hall structure is likely, the influence, which is fixed, may be canceled out of the image signal SV1 in the same manner as in the case of the audio signal SA.

[0244] The information for the estimation of the response of the audience may further include outputs from other sensors or some other forms of information. For example, an investigation may be conducted in the form of a questionnaire or orally by movie theater employees to determine the type of the audience prior to the start of the movie. The resultant information may be fed back for the estimation and various control operations. Other information such as the time of the day when the movie is shown, the season, date, temperature, the location of the hall, etc., may also be used for the estimation and various kinds of control.

[0245] While in the above embodiment the concept of the present invention was applied in the hall where a movie is shown, this should not be taken as limiting the scope of the invention. For example, the present invention may be embodied in a concert hall, live music house, theater, vaudeville theater, broadcast studio, open-air hall, stadium, multipurpose hall, etc.

Kondo describes utilizing various provided information to estimate an audience state. However, Kondo does not teach selecting particular characteristic amounts **from a magnitude of movement, periodicity of movement, a center of gravity of a power spectrum, a volume of sound, and periodicity of sound** for the estimation according to the environment condition of the audience that affects difficulty factors for obtaining movement of the audience and for obtaining sound of the audience.

In the present invention, as shown in Fig. 26, the characteristic amounts used for estimating the state of the audience is selected according to the contents provision state. For example, when the movement of the audience can be preferably obtained and sound including voice is difficult to obtain, the characteristic amounts showing a magnitude and periodicity of movement are mainly used to estimate an audience state; and when the movement of the audience is difficult to obtain and sound including voice can be preferably obtained, the characteristic amounts showing a volume and periodicity of sound are mainly used to estimate an audience state. In other words, different characteristic amounts 301-305, *i.e.*, **a magnitude of movement, periodicity of movement, a center of gravity of a power spectrum, a volume of sound, and periodicity of sound**, are selected according to the different environment conditions of the audience that affect difficulty for obtaining movement and sound of the audience.

Thus, Kondo does not disclose or render predictable “wherein **the movement amount is determined from a magnitude of movement, periodicity of movement, a center of gravity of a power spectrum, a volume of sound, and periodicity of sound** based on a contents provision state which indicates an environment condition of the audience that affects difficulty factors for obtaining movement of the audience and for obtaining sound of the audience,” as recited in claim 1.

Furthermore, this deficiency of Kondo is not cured by the supplemental teaching of Tow or Takata or Okada.

Therefore, Applicants submit that independent claim 1 is patentable and respectfully request reconsideration and withdrawal of the rejection.

For reasons similar to, or somewhat similar to, those described above with regard to independent claim 1, independent claims 6, 29, 31, 35, 55 and 57 are also patentable, and Applicants thus respectfully request reconsideration of the rejections thereto.

IV. DEPENDENT CLAIMS

The other claims in this application are each dependent from one of the independent claims discussed above and are therefore believed patentable for at least the same reasons. Applicants thereby respectfully request reconsideration and withdrawal of rejections thereto. Because each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

CONCLUSION

Because Applicants maintain that all claims are allowable for at least the reasons presented hereinabove, in the interests of brevity, this response does not comment on each and every comment made by the Examiner in the Office Action. This should not be taken as acquiescence of the substance of those comments, and Applicants reserve the right to address such comments.


In the event the Examiner disagrees with any of statements appearing above with respect to the disclosure in the cited reference, or references, it is respectfully requested that the Examiner specifically indicate those portions of the reference, or references, providing the basis for a contrary view.

Please charge any additional fees that may be needed, and credit any overpayment, to our Deposit Account No. 50-0320.

In view of the foregoing amendments and remarks, it is believed that all of the claims in this application are patentable and Applicants respectfully request early passage to issue of the present application.

Respectfully submitted,

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